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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,226	01/14/2002	Paul Brown	287122-00001-2	1895

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EXAMINER

KILKENNY, TODD J

ART UNIT PAPER NUMBER

1733

DATE MAILED: 01/31/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/047,226

Applicant(s)

BROWN, PAUL

Examiner

Todd J. Kilkenney

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II in Paper No. 8 is acknowledged.
2. Claims 1 – 14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Claim Objections

3. Claim 15 is objected to because of the following informalities: In line 3, should "in" be deleted? Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The subject matter of claims 18 and 19 is directed to applying a preformed panel over said slurry. In regard to this limitation, it appears that applicant's Figure 3 discloses providing slurry layer 34 and an overlay 30. However, while the specification appears to suggest that the overlay (30) in the embodiments of Figures 1 and 2 have a porosity similar, or in excess of, to that of the concrete structure and further more in

regard to the embodiment of Figure 3 it appears that applicant's disclosure suggests a porosity of the slurry such that the slurry will be porous to facilitate migration of chlorine ions and nitrite between it and the underlying concrete structure, it is not clear how this teaching relates to the porosity of the overlay (30) acting as a preformed panel in the embodiment of Figure 3 in relationship to the slurry layer as is currently being claimed. Clarification is asked.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15 – 17, 20 - 22 and 24 - 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatematsu et al (US 5,435,846) in view of Martin et al (Ca 1,258,473).

The invention of Tatematsu et al relates to cement additives for inhibiting concrete-deterioration and for inhibiting the corrosion of reinforcing steel caused by chloride ions contained in the concrete. As part of the cement additives, Tatematsu et al teach employing an "inorganic anion exchanger" which is capable of ion exchanging or adsorbing/retaining chloride ions in the concrete, wherein such adsorbing/retaining language is recognized by the examiner as being equivalent to applicant's claim language of sequestering. In one application, Tatematsu et al suggests that the cement

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additive can be applied alone or together with other additives as a crack or surface-repairing agent to a concrete body whose surface has peeled or been damaged by salt (Col. 1, lines 7 – 15; Col. 3, lines 21 – 32; Col. 5, lines 17 – 32). However, Tatematsu et al fail to positively suggest applying said cement additive to the concrete body by creating slurry containing the cement additive and positioning said slurry adjacent said concrete body.

Martin et al describe a method of inhibiting corrosion of metal reinforcements in concrete and one embodiment relates to pouring a concrete slurry containing said corrosion-inhibiting agent on top of an existing concrete structure having embedded iron or steel reinforcing members, wherein the corrosion-inhibiting agent is permitted to migrate from the slurry through the cured concrete structure and into corrosion-inhibiting contact with the metal reinforcement members (Page 5, line 17 – Page 6, line 2).

As to claims 15 – 17, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the technique of Martin et al (i.e. pouring on top of an existing concrete structure a slurry containing additives) as the method of applying the cement additive of Tatematsu et al as one of ordinary skill in the art would generally recognize that such a method of applying would be relatively simple and not labor-intensive and as disclosed by Martin providing the additives in concrete slurry would provide a safe and effective control over the amount of additive that is actually needed (Martin, Page 19, lines 1 – 12).

As to claims 20 – 22 and 24 – 26, Tatematsu et al teach employing a hydrocalumite as the “inorganic anion exchanger”. Said hydrocalumite is represented

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by the general formula $3\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{CaX}_{2/m} \cdot n\text{H}_2\text{O}$ wherein X is a univalent or bivalent anion examples of which are NO_3^- , NO_2^- , OH^- , CH_3COO^- , CO_3^{2-} and SO_4^{2-} , m is the valence number thereof; and $n < 20$ (Col. 4, lines 13 – 55). Tatematsu et al additional disclose “the anions, particularly NO_2^- , released from the anion exchanger in exchange reaction for Cl^- actively prevent or inhibit the corrosion of reinforcing steel” (Col. 5, lines 54 – 57).

8. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatematsu et al (US 5,435,846) in view of Martin et al (Ca 1,258,473) as applied to claim 15 and 17 above, and further in view of Hoopes et al (US 5,422,141).

Tatematsu et al in view of Martin et al render obvious a cement additive that sequesters chloride ions and applying said cement additive in slurry form on top of a concrete structure. However, neither Tatematsu et al nor Martin et al suggest applying a preformed panel over slurry.

Hoopes et al disclose a method of applying a corrosion inhibiting composition for reinforced concrete, wherein said method includes applying a cementitious overlay to the treated area of the concrete (i.e. the area to which the corrosion inhibiting composition has been previously applied). The cementitious overlay of Hoopes et al is disclosed to be a low permeability concrete that can significantly seal off the treated area from outside elements (Col. 6, lines 15 - 27). In view of Hoopes et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply a cementitious overlay over said application of the cement additive of Tatematsu et al

so as to provide a low permeability concrete cover for the concrete structure that will act to seal off the concrete structure from unwanted outside elements and block the corrosion inhibiting agent from diffusing out from the treated area. As to the overlay being a "preformed panel", it is the examiners position that although not positively disclosed as such by Hoopes et al, one of ordinary skill in the cement art would readily appreciate applying the cementitious overlay as a preformed panel and only the expected results would be achieved.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tatematsu et al (US 5,435,846) in view of Martin et al (Ca 1,258,473) as applied to claims 15, 16 and 22 above, and further in view of Michio (JP 09-286652).

Tatematsu et al suggest that the cement additive include an inorganic anion exchanger and disclose examples of hydrocalumite, hydrotalcite and hydroxyapatite. Tatematsu et al further disclose that hydrocalumite is preferred and fail to provide chemical formulas for either a hydrotalcite or a hydroxyapatite. However, as disclosed by Michio, hydrotalcites include employing in a source of aluminum a material other than $\text{CaO} \cdot \text{Al}_2\text{O}_3$ and $3\text{CaO} \cdot \text{Al}_2\text{O}_3$ (see English translation¹ of Michio, page 2). It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to employ in said source of aluminum a material other than $\text{CaO} \cdot \text{Al}_2\text{O}_3$ and $3\text{CaO} \cdot \text{Al}_2\text{O}_3$ as Tatematsu et al suggest that the inorganic anion exchange can be a

¹ Partial English translation of the Japanese reference to Michio was obtained via the JPO at the web address www.ipdl.jpo.go.jp/homepg_e.ipdl.

hydrotalcite wherein as disclosed by Michio, hydrotalcites are known to employ in said source of aluminum a material other than $\text{CaO} \cdot \text{Al}_2\text{O}_3$ and $3\text{CaO} \cdot \text{Al}_2\text{O}_3$.

10. Claims 27 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatematsu et al (US 5,435,846) in view of Marazzani et al (US 6,402,990).

As addressed above in regard to claim 15, Tatematsu et al relates to cement additives for inhibiting concrete-deterioration and for inhibiting the corrosion of reinforcing steel caused by chloride ions contained in the concrete. As part of the cement additives, Tatematsu et al teach employing an “inorganic anion exchanger” which is capable of ion exchanging or adsorbing/retaining chloride ions in the concrete, wherein such adsorbing/retaining language is recognized by the examiner as being equivalent to applicant’s claim language of sequestering. In one application, Tatematsu et al suggests that the cement additive can be applied alone or together with other additives as a crack or surface-repairing agent to a concrete body whose surface has peeled or damaged by salt damage (Col. 1, lines 7 – 15; Col. 3, lines 21 – 32; Col. 5, lines 17 – 32). However, Tatematsu et al fail to positively suggest applying said cement additive to the concrete body by creating a solution containing the cement additive and thereby introducing said solution to the concrete structure.

Marazzani et al teach a method of rehabilitating and/or protecting reinforced steel embedded in a hardened concrete structure with a corrosion-inhibitor applied to the surface of a concrete structure in solution form. Marazzani et al teach applying an aqueous corrosion-inhibiting composition to the surface of a hardened reinforced

concrete structure, which thereafter penetrates the concrete structure inwardly to protect the reinforcing steel (Col. 11, line 13 – Col. 12, line 13).

ENC As to claims ~~26~~ and 27, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the methodology of Marazzani et al (i.e. applying the corrosion inhibitor as an aqueous solution on top of an existing concrete structure, wherein the corrosion inhibitor solution penetrates the concrete structure inwardly to protect the reinforcing steel slurry containing additives) as the method of applying the cement additive of Tatematsu et al as Tatematsu et al generically teaches to apply said cement additive to the surface of a hardened structure and Marazzani et al provides a methodology of applying an additive to the surface that is advantageous in that it's not labor-intensive, implies only moderate overall cost of rehabilitative treatment, implies an easy application and does not influence the aspect of the concrete surface (Marazzani et al, Col. 5, lines 21 – 35).

As to claims 28 and 29, it the examiners position that capillary suction would naturally occur into the concrete structure in view of Marazzani et al suggestion of penetration. Furthermore, effecting said introduction of said solution under pressure would have been obvious to one of ordinary skill in the art as such is considered a well known technique of aiding the penetration of liquids into solids as would have been readily appreciated by one of ordinary skill in the cement structure art.

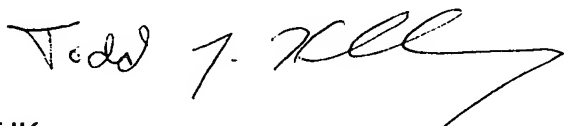
As to claims 30 and 31, Tatematsu et al additionally disclose "the anions, particularly NO_2^- , released from the anion exchanger in exchange reaction for Cl^- actively prevent or inhibit the corrosion of reinforcing steel" (Col. 5, lines 54 – 57).

Conclusion


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is **(703) 305-6386**. The examiner can normally be reached on Mon - Fri (9 - 5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



TJK
January 24, 2003



Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700